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Geotechnical Engineering

Geology

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Hydraulics

Environmental
Engineering

Project No. I-181-03
March 23, 2000

Boyle Engineering
7809 Convoy Court, #200
San Diego, CA 92111

Attention: Mr. Clark Fernon, Project Manager

Re: FIELD AND LAB DATA APPENDICES ADDENDA
TYPE SELECTION REPORT
GONZALES CREEK BRIDGE
SR-56 MIDDLE SEGMENT
SAN DIEGO, CALIFORNIA

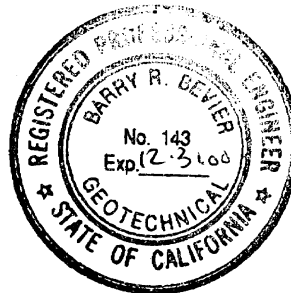
Dear Mr. Fernon:

As you requested, we are providing Appendices A and B for our previously submitted Type Selection Report for the Gonzales Creek Bridge. Our report was submitted on January 28, 1999, prior to completion of the laboratory testing and test boring logs. This addendum completes our work for this bridge.

We appreciate the opportunity to work with you on this project and trust this information meets with your approval. If you have any questions, please call.

Very truly yours,
GROUP DELTA CONSULTANTS, INC.

Barry R. Bevier, R.C.E. 31461, G.E. 143



Addressee (3)

APPENDIX A
FIELD EXPLORATION

APPENDIX A FIELD EXPLORATION

A.1 Introduction

The subsurface conditions at the Gonzales Creek Bridge site were investigated by Group Delta Consultants, Inc. (GDC) on January 5, 1999, by performing four soil borings (GCB-HSA-1 through GCB-HSA-4) to depths ranging from 12.3 to 15.4 meters. A summary of the soil borings is presented in Table A-1.

A.2 Soil Drilling and Sampling

The borings were advanced utilizing a CME 85 hollow-stem drill rig. The borings had a hole diameter of about 203.2 mm. The borings were performed by our drilling subcontractors under a continuous technical observation of a GDC field geologist, who visually inspected the soil samples, maintained detailed logs of the borings, interpreted stratigraphy, classified the soils, and obtained relatively undisturbed drive samples as well as Standard Penetration Test (SPT) samples and bag/bulk samples at about 1.5 m interval.

The soils were classified in the field and further examined in the laboratory in accordance with the Unified Soil Classification System (see Figure A-1). Field classifications were modified where necessary on the basis of laboratory test results. Detailed logs of the soil borings including blow count data and in situ moisture content and soil density are presented in Figures A-2 through A-4. Laboratory tests performed, other than the moisture content and dry density determination, are shown on the boring logs in the column "Other Tests". Descriptions and result summaries of laboratory tests performed are presented in Appendix B.

Relatively undisturbed soil samples were obtained using 76.2-mm outside diameter Modified California sampler lined with brass rings, each 25.4-mm high and 61.5-mm inside diameter. The ring and tube samplers were driven with a 63.6-kg safety hammer with an automatic release dropping 762 mm.

In addition, Standard Penetration Tests were performed in accordance with ASTM D1586-82 using a 50.8-mm outside diameter and 34.9-mm inside diameter split-spoon barrel sampler. The SPT sampler was driven with a 63.6-kg safety hammer with an automatic release dropping 762 mm. The Standard Penetration Test consists of counting the number of hammer blows it takes to drive the sampler 0.3 m into the ground. SPT blow counts are often used as an index of the relative density and resistance of the sampled materials. California drive sampler blow counts can be converted to equivalent SPT blow counts using a sampler end-area correction factor of about 0.67.

The following abbreviations are used on the logs to indicate the type of test performed:

AL	Atterberg Limits Tests (Plastic and Liquid Limits)
CO	Soil Corrosivity Tests (pH, Sulfates, Chlorides, and Electrical Resistivity)
CT	Compaction Test (Max. Dry Density-Optimum Moisture Content)
DS	Laboratory Direct Shear Test
GS	Grain Size Distribution Test
WA	Wash Analysis (% Passing #200 Sieve or Fines Content)

A.3 List of Attached Tables and Figures

The following tables and figures are attached and complete this appendix:

Table A-1	Soil Boring Summary
Figure A-1	Key for Soil Classification
Figures A-2 through A-5	Boring Logs (GCB-HSA-1 through GCB-HSA-4)

TABLE A-1
SOIL BORING SUMMARY
GONZALES CREEK BRIDGE
STATE ROUTE 56, MIDDLE SEGMENT

Boring No.	Station No.*	Offset * (m)	Surface Elevation (m)	Total Depth (m)	Hole Diameter (mm)	Groundwater Depth (m)	Excavation Equipment
GCB-HSA-1	NA	NA	45.0	13.9	203.2	Not Encountered	CME 85 HSA
GCB-HSA-2	NA	NA	44.4	13.9	203.2	Not Encountered	CME 85 HSA
GCB-HSA-3	NA	NA	42.2	12.3	203.2	10.6 (Perched)	CME 85 HSA
GCB-HSA-4	NA	NA	50.3	15.4	203.2	Not Encountered	CME 85 HSA

* Metric station and offset referenced from the centerline of the proposed Route 56 alignment were not surveyed.

KEY FOR SOIL CLASSIFICATION

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)				
PRIMARY DIVISIONS		GROUP SYMBOL	SECONDARY DIVISIONS	
COARSE-GRAINED SOILS ($< 50\%$ fines content)	GRAVEL (% GRAVEL $>$ % SAND)	CLEAN GRAVEL (Less than 5% fines)	GW	Well-graded gravel, gravel with sand, little or no fines
			GP	Poorly-graded gravel, gravel with sand, little or no fines
		"DIRTY" GRAVEL (More than 12% fines)	GM	Silty gravel, silty gravel with sand, silty or non-plastic fines
			GC	Clayey gravel, clayey gravel with sand, clayey or plastic fines
	SAND (% SAND \geq % GRAVEL)	CLEAN SAND (Less than 5% fines)	SW	Well-graded sand, sand with gravel, little or no fines
			SP	Poorly-graded sand, sand with gravel, little or no fines
		"DIRTY" SAND (More than 12% fines)	SM	Silty sand, silty sand with gravel, silty or non-plastic fines
			SC	Clayey sand, clayey sand with gravel, clayey or plastic fines
		SILTS AND CLAYS (Liquid Limit less than 50)	ML	Inorganic silt, sandy silt, gravelly silt, or clayey silt with low plasticity
			CL	Inorganic clay of low to medium plasticity, sandy clay, gravelly clay, silty clay, Lean Clay
			OL	Low to medium plasticity Silt or Clay with significant organic content (vegetative matter)
			MH	Inorganic elastic silt, sandy silt, gravelly silt, or clayey silt of medium to high plasticity
FINE-GRAINED SOILS ($> 50\%$ fines content)	SILTS AND CLAYS (Liquid Limit 50 or more)		CH	Inorganic clay of high plasticity, Fat Clay
			OH	Medium to high plasticity Silt or Clay with significant organic content (vegetative matter)
			PT	Peat or other highly organic soils

Note: Dual symbols are used for coarse grained soils with 5 to 12% fines (ex: SP-SM), and for soils with Atterberg Limits falling in the CL-ML band in the Plasticity Chart
Borderline classifications between groups may be indicated by two symbols separated by a slash (ex: CL/CH, SW/GW).

CONSISTENCY CLASSIFICATION				
COARSE GRAINED SOILS		FINE GRAINED SOILS		
Blowcount SPT ¹ (CAL) ²	Consistency	Blowcount ³ SPT ¹ (CAL) ²	Consistency	Undrained Shear Strength ³ , S_u (ksf)
0-4 (0-6)	Very Loose	< 2 (< 3)	Very Soft	< 0.25
		2-4 (3-6)	Soft	0.25 - 0.50
5-10 (7-15)	Loose	5-8 (7-12)	Firm	0.50 - 1.0
11-30 (16-45)	Med. Dense	9-15 (13-22)	Stiff	1.0 - 1.5
31-50 (46-75)	Dense	16-30 (23-45)	Very Stiff	1.5 - 2.0
> 50 (> 75)	Very Dense	> 31 (> 45)	Hard	> 2.0

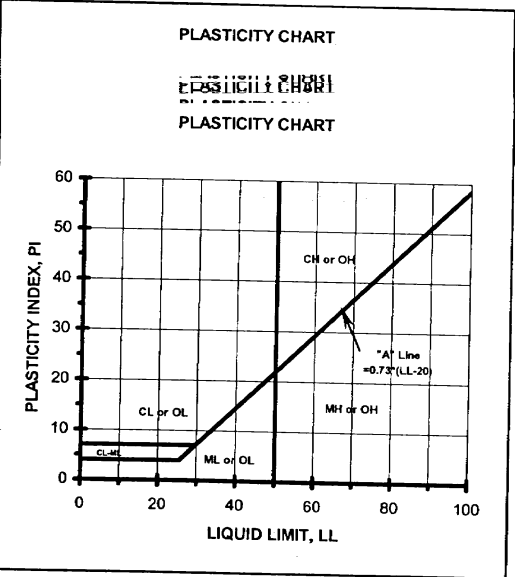
MOISTURE CLASSIFICATION
DRY - Absence of moisture, dusty, dry to the touch
MOIST - Damp but no visible water
WET - Visible free water, usually soil is below water table

CONSISTENCY NOTES:
1. Number of blows of a 140-lb. hammer falling 30-inches to drive a 2-inch O.D. (1.375-inch I.D.) SPT Sampler (ASTM D-1585) the final 12-inches of driving
2. Number of blows of a 140-lb. hammer falling 30-inches to drive a 3-inch O.D. (2.42-inch I.D.) California Ring Sampler the final 12-inches of driving.
3. Undrained shear strength of cohesive soils predicted from field blowcounts is generally unreliable. Where possible, consistency should be based on S_u data from pocket penetrometer, torvane, or laboratory testing.

CLASSIFICATION CRITERIA BASED ON LABORATORY TESTS

Grain Size Classification

CLAY AND SILT	SAND			GRAVEL		COBBLES	BOULDERS
	Fine	Medium	Coarse	Fine	Coarse		
US Std Sieve No. 200 No. 100 No. 60 No. 40 No. 20 No. 10 No. 4 No. 2	No. 200 No. 100 No. 60 No. 40 No. 20 No. 10 No. 4 No. 2	No. 40 No. 20 No. 10 No. 4 No. 2	No. 20 No. 10 No. 4 No. 2	No. 4 No. 2	No. 2 No. 10 No. 40 No. 200	No. 20 No. 10 No. 4 No. 2	No. 2 No. 10 No. 40 No. 200
Grain Size (mm)	0.075	0.425	2	4.75	19.1 76.2	304.8	304.8



Classification of earth materials shown on the logs is based on field inspection and should not be construed to imply laboratory analysis unless so stated.

Granular Soil Gradation Parameters
Coefficient of Uniformity: $C_u = D_{60} / D_{10}$
Coefficient of Curvature: $C_c = (D_{30})^2 / (D_{10} \times D_{60})$
 D_{10} = 10% of the soil is finer than this diameter
 D_{30} = 30% of the soil is finer than this diameter
 D_{60} = 60% of the soil is finer than this diameter

Group Symbol	Gradation or Plasticity Requirement
SW	$C_u > 6$ and C_c between 1 and 3
GW	$C_u > 4$ and C_c between 1 and 3
GP or SP	Clean gravel or sand not meeting requirement for GW or SW
GM or SM	Plots below "A" Line on Plasticity Chart or $PI < 4$
GC or SC	Plots above "A" Line on Plasticity Chart and $PI > 7$

Metric Unit Conversion: 1" = 25.4 mm, 1.0 ksf = 47.88 kPa

OTHER TESTS	MOISTURE (%)	DRY DENSITY (kg/m ³)	PENETRATION RESISTANCE (blows/0.3m)	SAMPLE TYPE	DEPTH (meters)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (meters)
						THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.	
GS	11.7	1737	85	D	0	Slopewash / Alluvium: Clayey Fine Sand (SC), medium dense, dark brown, moist	45.0 ±
					1		44
GS	14.7		18	S	2	Sandy Lean Clay (CL), very stiff, brown, moist	43
AL CO			-	B			
AL DS GS	17.8	1607	100+	D	3	La Jolla Group: Silty Fine Sand (SM), very dense, light gray, moist, locally strongly cemented	42
CO			-	B	4	With few gravels up to 38 mm in size	41
AL GS	15.2		100	S	5		40
					6	With few gravels up to 25 mm in size Fines content = 18%	39
WA	14.9	1758	100+	D	7		38
					8	With few medium sands, fines content = 28%	37
WA	12.5		85	S		Cemented sand layer from 8.2 to 8.5 m	
					9	With some gravels up to 64 mm in size	36

SAMPLE TYPES:

- ☐ Rock Core
- ☐ Standard Split Spoon
- ☐ Drive Sample
- ☐ Bulk Sample
- ☐ Tube Sample

DATE DRILLED:

01/05/1999

EQUIPMENT/METHOD USED:

CME 85/8" HSA

FIELD SUPERVISOR:

J. BROWN


GROUP



PROJECT NO. I-181

STATE ROUTE 56 MIDDLE SEG. PROJECT
Gonzales Creek Bridge

Log of Boring No. GCB-HSA- 1

OTHER TESTS	MOISTURE (%)	DRY DENSITY (kg/m ³)	PENETRATION RESISTANCE (blows/0.3m)	SAMPLE TYPE	DEPTH (meters)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (meters)
						THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.	
	12.7	1752	100+	D	10	 Cemented sand layer from 11.1 to 11.4 m With some gravels up to 76 mm in size Becomes dark gray	45.0 ±
	13.5		100+	S	11		-35
					12		-34
					13		-33
					14		-32
	12.5		100+	S	14	Bottom of boring at El. 31.1 m Groundwater not encountered	-31
					15		-30
					16		-29
					17		-28
					18		-27
					19		-26

SAMPLE TYPES:

- ☐ C Rock Core
- ☐ S Standard Split Spoon
- ☐ D Drive Sample
- ☐ B Bulk Sample
- ☐ T Tube Sample

DATE DRILLED:

01/05/1999

EQUIPMENT/METHOD USED:

CME 85/8" HSA

FIELD SUPERVISOR:

J. BROWN



PROJECT NO. I-181

STATE ROUTE 56 MIDDLE SEG. PROJECT
Gonzales Creek Bridge

Log of Boring No. GCB-HSA- 1

OTHER TESTS	MOISTURE (%)	DRY DENSITY (kg/m ³)	PENETRATION RESISTANCE (blows/0.3m)	SAMPLE TYPE	DEPTH (meters)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (meters)
						THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.	
					0	Alluvium: Silty to Clayey Medium to Fine Sand (SM,SC), brown, moist, loose to medium dense	44.4 ±
DS WA	16.3	1695	10	S			-44
					1		-43
DS WA	17.0	1695	33	D		Fines content = 34%	-42
					2		-41
CT DS WA	13.9	1829	30	B		Clayey Medium to Fine Sand (SC), medium dense to dense, brown, moist Fines content = 30%	-40
				S	3	Fines content = 27%	-39
DS WA	14.5	1829	40	D		Fines content = 25%	-38
					4	Increased clay content with few gravels up to 13 mm in size	-37
	19.2	1809	50	S			-36
					5		-35
	15.9	1809	100+	D		La Jolla Group: Silty Medium to Fine Sand (SM), very dense, light gray, moist, with occasional gravels, locally strongly cemented	-34
					6		-33
GS	12.7		100+	B			-32
				S	7		-31

SAMPLE TYPES:

- ☐ Rock Core
- ☐ Standard Split Spoon
- ☐ Drive Sample
- ☐ Bulk Sample
- ☐ Tube Sample

DATE DRILLED:

01/05/1999

EQUIPMENT/METHOD USED:

CME 85/8" HSA

FIELD SUPERVISOR:

J. BROWN

GROUP



PROJECT NO. I-181

STATE ROUTE 56 MIDDLE SEG. PROJECT
Gonzales Creek Bridge

Log of Boring No. GCB-HSA- 2

OTHER TESTS	MOISTURE (%)	DRY DENSITY (kg/m ³)	PENETRATION RESISTANCE (blows/0.3m)	SAMPLE TYPE	DEPTH (meters)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (meters)
						THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.	
							44.4 ±
					10	<div> <div></div> <div>With few gravels up to 51 mm in size</div> </div>	34
					11		
					12		33
					13		32
	13.7	1647	100+	D		<div> <div></div> <div>Cemented sand layer from 11.3 to 11.6 m</div> </div>	
					14	<div> <div></div> <div>Becomes dark gray</div> </div>	31
					15		
					16		
					17		
					18		
					19		
	12.9		100+	S		<div> <div></div> <div>Bottom of boring at El. 30.5 m Groundwater not encountered</div> </div>	30
							29
							28
							27
							26
							25

SAMPLE TYPES:

- ☐ Rock Core
- ☐ Standard Split Spoon
- ☐ Drive Sample
- ☐ Bulk Sample
- ☐ Tube Sample

DATE DRILLED:

01/05/1999

EQUIPMENT/METHOD USED:

CME 85/8" HSA

FIELD SUPERVISOR:

J. BROWN



PROJECT NO. I-181

STATE ROUTE 56 MIDDLE SEG. PROJECT
Gonzales Creek Bridge

Log of Boring No. GCB-HSA- 2

OTHER TESTS	MOISTURE (%)	DRY DENSITY (kg/m3)	PENETRATION RESISTANCE (blows/0.3m)	SAMPLE TYPE	DEPTH (meters)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (meters)
						THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.	
	11.0		20	S	0	Alluvium: Clayey Medium to Fine Sand (SC), medium dense, dark brown, moist, with few gravels and cobbles up to 152 mm in size	42.2 ±
					1		42
	18.4	1541	34	D	2	La Jolla Group: Sandy Lean Clay (CL), hard, brown, moist	41
					3	Silty Medium to Fine Sand (SM), very dense, light gray, moist, with occasional gravels, locally strongly cemented	40
	12.8		100+	S	4		39
				B	5		38
					6	Cemented sand layer from 4.6 to 5.0 m	37
	15.4	1723	100+	D	7		36
					8	With thin interlayers (<75 mm) of brown Clayey Medium to Fine Sand (SC) and light gray Sandy Silt (ML)	35
	13.8		100+	S	9		34
					10	With many small concretions up to 51 mm in size	33
	12.0	1540	100+	D	11	Cemented sand layer from 9.1 to 9.3 m	

SAMPLE TYPES:

- ☒ Rock Core
- ☒ Standard Split Spoon
- ☒ Drive Sample
- ☒ Bulk Sample
- ☒ Tube Sample

DATE DRILLED:

01/05/1999

EQUIPMENT/METHOD USED:

CME 85/8" HSA

FIELD SUPERVISOR:

J. BROWN



PROJECT NO. I-181

STATE ROUTE 56 MIDDLE SEG. PROJECT
Gonzales Creek Bridge

Log of Boring No. GCB-HSA- 3

PAGE 1 OF 2

FIGURE A-4 a

OTHER TESTS	MOISTURE (%)	DRY DENSITY (kg/m ³)	PENETRATION RESISTANCE (blows/0.3m)	SAMPLE TYPE	DEPTH (meters)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (meters)
	15.6	1604	100+	D	10	<p>THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.</p> <p>With few gravels up to 51 mm in size</p> <p>▽</p>	42.2 ±
					11		32
					12		31
	13.3		100+	S	12	<p>Bottom of boring at El. 29.8 m</p> <p>Perched water encountered at El. 31.5 m</p>	30
					13		29
					14		28
					15		27
					16		26
					17		25
					18		24
					19		23

SAMPLE TYPES:

☒ Rock Core

☒ Standard Split Spoon

☒ Drive Sample


☒ Bulk Sample

☒ Tube Sample

DATE DRILLED:
01/05/1999

EQUIPMENT/METHOD USED:
CME 85/8" HSA

FIELD SUPERVISOR:
J. BROWN



PROJECT NO. I-181

STATE ROUTE 56 MIDDLE SEG. PROJECT

Gonzales Creek Bridge

Log of Boring No. GCB-HSA- 3

OTHER TESTS	MOISTURE (%)	DRY DENSITY (kg/m ³)	PENETRATION RESISTANCE (blows/0.3m)	SAMPLE TYPE	DEPTH (meters)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (meters)
						THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.	
	8.7		20	S	0	Top Soil / Residual Clay: Clayey Medium to Fine Sand (SC), medium dense, brown, moist	50.3 ±
					1	Sandy Lean to Fat Clay (CL/CH), stiff, mottled brown, moist	50
	13.1	1787	100+	D	2	La Jolla Group: Silty Fine Sand (SM), very dense, light gray, moist, locally strongly cemented, with interbeds of Sandy to Clayey Silt (ML/MH) and Lean to Fat Clay (CL/CH), hard, gray, moist	49
					3	Silt interbed from 3.1 to 3.5 m	48
	19.0		65	S	4		47
				B	5		46
	11.6	1675	100+	D	6	Clay interbed 25 mm thick	45
					7		44
	12.3		100+	S	8	Silt interbeds 51 mm thick from 6.1 to 6.4 m Cemented sand layer from 6.4 to 6.7 m	43
					9		42
	16.3	1691	100+	D	10	With few gravels and shell fragments	41
					11	Becomes dark gray	
			100+	S	12		

SAMPLE TYPES:

- ☐ Rock Core
- ☐ Standard Split Spoon
- ☐ Drive Sample
- ☐ Bulk Sample
- ☐ Tube Sample

DATE DRILLED:

01/05/1999

EQUIPMENT/METHOD USED:

CME 85/8" HSA

FIELD SUPERVISOR:

J. BROWN



PROJECT NO. I-181

STATE ROUTE 56 MIDDLE SEG. PROJECT
Gonzales Creek Bridge

Log of Boring No. GCB-HSA- 4

OTHER TESTS	MOISTURE (%)	DRY DENSITY (kg/m ³)	PENETRATION RESISTANCE (blows/0.3m)	SAMPLE TYPE	DEPTH (meters)	DESCRIPTION OF SUBSURFACE MATERIALS	ELEVATION (meters)
						THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.	
							50.3 ±
					10		40
					11		39
	13.7		100+	S	12	Cemented sand layer from 11.6 to 11.8 m	38
					13	With some medium sands	
					14	Cemented sand layer from 12.5 to 12.9 m	
	15.8	1753	100+	D	15		37
					16	Becomes light gray	36
	12.4		100+	S	17		35
					18	Bottom of boring at El. 34.9 m	34
					19	Groundwater not encountered	33
							32
							31

SAMPLE TYPES:

☐ Rock Core

☐ Standard Split Spoon

☐ Drive Sample


☐ Bulk Sample

☐ Tube Sample

DATE DRILLED:
01/05/1999

EQUIPMENT/METHOD USED:
CME 85/8" HSA

FIELD SUPERVISOR:
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PROJECT NO. I-181

STATE ROUTE 56 MIDDLE SEG. PROJECT

Gonzales Creek Bridge

Log of Boring No. GCB-HSA- 4

PAGE 2 OF 2
FIGURE A-5 b